

THE SEMANTICS OF NOUN CLASSES IN PROTO-BANTU

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1. Introduction¹

Everyone who has ever worked with a Bantu language has faced the problem of deciding what kind of system is encoded with the gender class markers. In particular the idea that noun classes, constituted on the basis of occurrence with class prefixes, have characteristic semantic contents has been considered by many Bantuists. The typical conclusion which is reached is that while all or most members of certain natural classes of entity may be placed in the same class (familiar examples are the placement of trees in class 3/4 and fruits in class 5/6), the classes themselves have no overall intrinsic semantic content (with the frequent exception of class 1/2).

For Proto-Bantu the situation is very much the same. The following conclusion was reached by Richardson [1967:378]:

Most scholars agree that the principles which govern the assignment of nominals to classes in modern Bantu languages are far from clear. From first impressions it would seem that at some point in the evolution of the languages concerned (if indeed this was a logical process) there was some kind of confusion which obscured a hypothetical clear-cut conceptual taxonomy. A closer examination reveals, however, that it is impossible to prove conclusively by any reputable methodology that nominal classification in Proto-Bantu was indeed widely based on conceptual implication...

In this paper we will utilize what we argue is a "reputable" (we would prefer the term "reasonable") methodology and present evidence to support the claim, previously sketched in Creider [1975], that PB noun prefixes realized a semantic system where each prefix was, in general, associated with a particular characteristic meaning. To look ahead briefly, we will be claiming that the bulk of the noun prefixes were

¹An earlier version of this paper was read at the Sixth Conference on African Linguistics, Ohio State University, Columbus, Ohio, April, 1975.

associated with configurational or shape meanings. We will also present evidence to show that systems encoding meanings of this type are not rare among languages of the world (and that in fact they are very common).

2. Kinds of Evidence

Our evidence is of two sorts, direct and indirect. The direct evidence comes from an examination of PB vocabulary. In order to avoid the possibility of our biasing the content of particular classes we have taken for a first data set only and all of those forms which Guthrie reconstructed as present in PB and for which he gave a probable PB class membership [Guthrie 1971:Appendix 8/1]. Since Guthrie had no idea whatsoever of the existence of the semantic system we describe below we avoid any possible predetermination (by ourselves) of the results and also force ourselves to consider possibly negative data. In a few instances we have augmented our data by considering some of Guthrie's "starred forms" (i.e., common Bantu forms) which have reasonably wide geographical distributions. We identify all such augmentations below.

Most of the items of each list are concrete nouns but a few are abstract nouns. Although most abstract nouns in Bantu occur in class 14 a few are found in each class; in this study we leave them aside, since an understanding of their class placements requires a study of Bantu intellectual culture. They are listed at the end of each class.

Once appropriate lists of concrete nouns have been constructed and a hypothesis worked out as to a particular dimension of meaning, data can be grouped into cases favourable for the hypothesis (i.e., items which are clearly appropriate to a given class if the class has the hypothesized meaning) and unfavourable cases. If the hypothesis is correct then the result will be a markedly skewed distribution. In other words we test our hypothesis against the null hypothesis that classification in terms of particular dimensions of meaning is independent of noun class membership. We may illustrate with a specific example: we argue below that classes 3/4 and 5/6 contrast in terms of extendedness-- nouns in class 3/4 refer to extended objects and nouns in 5/6 refer to

non-extended objects (we will characterize these terms more fully below). If classification by extendedness is independent of classification by noun class then the proportion of "extended" nouns in each noun class should be the same. In fact in class 3/4 we have twenty seven instances of extended items versus five not clearly extended items. In class 5/6 we have twenty-seven non-extended items versus four items which are not clearly non-extended. Following a standard statistical decision-making procedure we determine that the probability that we will be wrong in rejecting the null hypothesis of independence is less than 0.001.

The alert reader will note that our procedure is statistical in a second sense: our vocabulary lists are a sample of PB vocabulary. Having no access to the gender class placement of all nouns in PB we cannot begin to answer the question of how productive the system was. It is possible that the system we describe below is one which existed in a cognitively real sense only at some earlier period in the existence of the "language" and that what we have uncovered is a relic, preserved by the tendency of nouns to remain in the class in which they were originally placed (the original placement being done on semantic grounds). On the other hand it is quite possible that the system we describe still has cognitive salience for speakers of at least some Bantu languages at present.

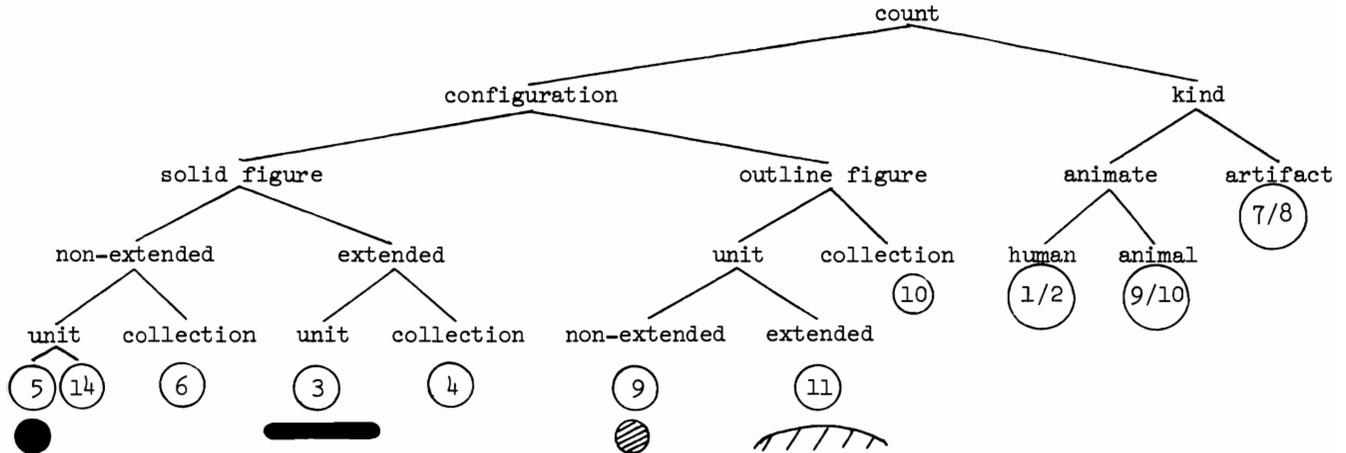
The indirect evidence we will present consists of a discussion of noun classifier sets found in other languages throughout the world. We show that these sets are structured in terms of meaning distinctions which are very much like those of the PB system. In other words, the PB system should not be regarded as a linguistic oddity.

3. Direct Evidence: an Examination of PB Vocabulary

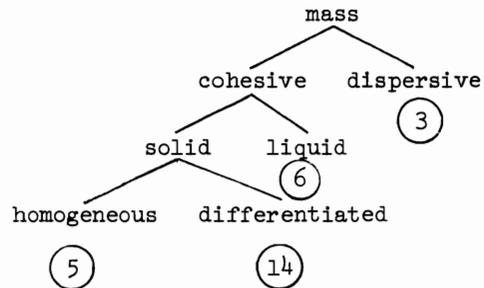
As shown in Figure 1, we initially separate count nouns from mass nouns. Mass nouns constitute a separate subsystem which utilizes some of the morphemes of the main (count noun) system, but which has sufficient semantic distinctness to justify its separate treatment. Looking now at count nouns the first major division is between prefixes which classify according to the spatial configuration of the objects classified,

Figure 1. Proto-Bantu Noun Class Semantics

For count nouns:



For mass nouns:



and prefixes which classify into kinds, such as classifying dogs as animals and hammers as tools. This distinction is further discussed in section 4 with respect to other languages. Classes 1/2, the part of 9/10 applying to animals, and 7/8 make up the latter system.

Configurational classes are distinguished according to whether solid shape (3/4, 5/6) or outline shape (9/10, 11/10) is being utilized as the basis of classification. Then within each of these pairs a contrast is made between extended and non-extended configuration.² These contrasts are perhaps easiest to grasp by looking at the "characteristic" visual appearances we have provided in the diagrams under each of these four classes in Figure 1.

In descriptive terms extended means characterized by relative length in one dimension at the expense of the other two, or less often, by relative length in two dimensions at the expense of the third. Non-extended may be negatively characterized as not extended, and is positively characterized as rounded, protruded, humped, bunched, etc. The contrast between outline and solid shape is a contrast between objects which have clear profiles, edges or boundaries such that there is a difference between an outside and an inside, and objects which do not have this characteristic. In order that an outline define an interior it must be curved, whether it is extended or non-extended. Thus, the basic shape for class 11/10 is an extended curve within which there is an interior. Typical examples are horn, rib, and hill. Objects of non-extended outline in class 9/10 include pot, drum, seed, and the head pad used for carrying pots of water which is a woven ring of grass. The same contrast between outline and solid shape is found in the locative prefixes. Morava [1975] reports for Swahili that class 18 mu- refers to "a space whose interior is of primary importance" in contrast to class 16 pa- which refers to "a space viewed as simple and homogeneous".

Readers are now invited to scan the lists of the four configurational classes 5/6, 3/4, 9/10, and 11/10 at the end of the paper to see if they

²Note that our only evidence for the higher level ordering of the solid/outline contrast is the use of Cl. 10 as the plural marker for both Cl. 9 and Cl. 11. Otherwise the relationship between extendedness and solid/outline would be unordered (i.e., the two dimensions would be orthogonal).

agree with these semantic interpretations. We have placed first those concrete nouns which rather obviously show the configuration we have suggested for each class. Then we have listed concrete nouns which are problematic in not obviously showing the configuration in question. Usually we have indicated in brackets characteristics which might account for class membership, and we comment on some of these below. Finally we list abstract nouns, occasionally with comments, although they lie outside the scope of this paper. The dividing line between concrete and abstract nouns is roughly that which Friedrich [1970] proposed for his studies of shape in grammar, i.e., concrete nouns refer to objects which possess spatial dimensions. Besides the four main configurational classes there is another one for count nouns, 14/6, but since it has only five items in Guthrie's PB list we advance no semantic hypothesis about it until we have looked later in the paper at the use of 14 for mass nouns. Guthrie's PB list has no items in 15/6.

The non-extended solid figure class, 5/6, contains both independent objects, such as egg, stone, tear, and ember, and protrusions such as breast, heap, and base of tree. It also contains small circular objects which are relatively flat such as freckle, body hair, and fish hook. Among the problematic cases, bone and wing may simply be further examples of protruding body parts like cheek and buttock. The class numbers in brackets indicate other classes in which a given word is found in some languages according to Guthrie's starred forms list [Guthrie 1971:Index A, 118 ff], although 5/6 is the probable class he assigns in the PB list [1971:Appendix 8/1]. Certainly, 3/4 (extended solid shape) for bone, and 11/10 (extended outline shape) for wing make good sense. Ear is likewise probably a bodily protrusion--it may seem to have a rather extended configuration, yet it may be blocked from 3/4 because the same stem occurs there meaning 'head'. Fruits are generally found in 5/6, and palm-frond may be a broader sense of fruit meaning that part of the plant characteristically gathered for human use. A similar example from Guthrie's starred forms is *-káyá 'tobacco leaf'. Note that this means that 5/6 will appear on the kinds side as well as the configurational side. We discuss this possibility further below.

The extended solid figure class, 3/4, contains a wide variety of lengthy items which are clear examples of this configuration. The problematic cases include two body parts, head and forehead, for which length may possibly have been culturally valued. Cases where nouns are reclassified in accordance with cultural values and beliefs, contrary to their actual configurations, have been described for Australian languages by Dixon [1968]. The other body part listed, heart, is certainly not extended in shape but is attached to the blood vessels which are in the extended classes 3/4 and 11/10. Also it is associated with blood whose extension throughout the body is marked by its placement in 3 rather than 6 the normal class for liquids. Placement in 3/4 also serves to distinguish it from the same stem in 5/6 meaning 'liver'. Looking briefly at the abstract nouns, we suggest that spatial extension may apply metaphorically to temporal extension thereby including year, month and daytime.

A wide variety of things satisfy the configuration required by class 9/10: that of a non-extended figure with a distinctive interior. First of all, they include all kinds of rigid and flexible containers, from obvious cases like pot and charm bundle to less obvious ones like drum, house, gall bladder, and skin garment. A special case connected with this is -tunda referring to heaps created by dumping material from containers. This noun is also found in some languages in 5/6 with other nouns referring to heaps, and in 7/8 with other artifacts. Secondly, the outline and interior configuration of 9/10 is satisfied by anything with space in its interior such as rings, holes and hollows, as well as many different geographical spaces of which ground, open space, path, outside, and back are seen here (some apparently used only in the singular). A special case here is 'neck' containing the open ways for air and food to pass into the body. Thirdly, the outline and interior configuration is shown by objects which have a shell and some insides, the example here being seed. A fourth group of cases are those where the outline of the object is distinctive, whether it be a surround as in eyebrow, or a surface as in examples from Guthrie's starred list such as smoothing-stone and grinding-stone. A special case in the present list

is peg which, while not itself having the 9/10 configuration, is attached to the edge of things like drumheads and tents in order to stretch them out; the noun is related to a verb for this kind of action. The fifth kind of item also does not have the 9/10 configuration but only participates in it. The example here is -yundo 'hammer, axe', but Guthrie's starred list also includes digging sticks, knives, and cudgels. Membership in 9/10 seems to mark these tools as useful for penetrating a surface and getting into an interior.

The problematic cases in 9/10 include body parts such as abdomen and kidney which may possibly be viewed as containers, as well as paddle whose concave shape and whose function may enable it to be seen as a quasi-container of water. The fanciful suggestion we make in the table for star and spark is based on their strong brightness contrast with the surrounding darkness.

As mentioned earlier the extended outline shape of items in class 11/10 must be curved so that the outline can contain an interior of some kind. Crust, fingernail, rib, and palm of hand are good examples of extended outlines which curve so as to define an interior. Hill and spider's web also involve curved outlines in which the area inside the curve contrasts strongly with that outside the curve. There is, however, another kind of extended structure which has an interior, the lengthy container, of which horn is an example here, and to which we may add umbilical cord, river, waterhole and perhaps body from the starred forms list. Of the four major configurational classes, Guthrie suggests that 11 is a more recent development than 5, 3, or 9. Certainly it is smaller in both his lists and there appear to be more cases of alternative class memberships.

The side of the system concerned with kinds for count nouns is both easier and more difficult to analyze. It is easier in that two of the three classes have manifestly clear semantic content. Class 1/2 is solidly present in PB with the meaning human, and an overwhelming majority of animals are located in Class 9/10. The only animals which are not found in 9/10 are those with pronounced shape characteristics (leech in 3/4 (extended) and spider in 5/6 (non-extended)) and those which are

particularly despised which are placed in 7/8 (frog). Class 7/8 is more difficult to analyse, and recourse must be had to the enlarged data set of starred forms where items such as comb, mat, thing, stool, and basket suggest that its primary meaning is instrumental artifact. Antheap and nest, which are artifacts constructed by non-humans, support this hypothesis.

Kinds are also difficult to analyse because it is here that subsidiary principles of classification operate to override the more fundamental ones. Looking first at 7/8 it is a fairly natural extension from 'used object' to 'despised object', and it appears that this additional meaning had been established in PB for class 7/8 as evidenced by such items as sore, pubes, lame person, frog. Less readily understandable, but rather clearly suggested in the data is the use of 9/10 for powerful persons, such as chief and medicine man.

Considerably more work needs to be done on kinds in the Bantu system. Among the possibilities are the following: 1) The animal class 9/10 may be related to the configurational class 9/10 (non-extended outline) because animals are recognized by their characteristic outlines. 2) The human class 1/2 may have developed from the extended class 3/4--Guthrie reconstructs both the class 1 and 3 prefixes as *mu-. Similar relations may be observed in other language families: in Athapaskan the animate class, teeh, seems related to the extended, one-dimensional, and rigid class t||h (these morphemes are Navaho imperfective classificatory verbs of handling). 3) There may be other classes represented on the kinds side as well as the configurational side of the system. We have mentioned previously that 5/6 seems to be used for typical products taken for human use from plants without regard to their configuration. It has been suggested to us (Marion Johnson--personal communication) that 3/4 may constitute a class for plants on the kinds side of the system, e.g., Swahili mnea 3/4 'anything possessing vegetative life or growth'. If these suggestions hold up the kinds side might look somewhat as follows: 1/2 human, 9/10 animals, 3/4 plants, 5/6 fruits, and 7/8 artifacts, somewhat as outlined in Givón [1970]. A similar development of kinds from configuration classes has been noted for Garo by Adams and Conklin

[1973]: the non-extended class is also a fruits class which includes fruits like bananas despite their extended configuration.

We turn, now, from the count nouns to the mass nouns, the classes for which constitute a semi-independent sub-system. Some of the morphemes from the count system are used again for masses, with meanings which establish suitable classes for mass substances yet which are related to the meanings of the count classes. In the present data set the mass nouns fall mostly into classes 5, 14, 6, and 3. The mass sub-system is depicted, under the equivalent count classes, at the lower left of Figure 1. Note that in re-using the classes for mass nouns the singular-plural distinction disappears and in fact one of the plural prefixes is used, 6, along with three of the singular ones.

If we examine the distinctions in the mass sub-system we can see how they are related to those in the count system. The first distinction, cohesive/dispersive, is related to the non-extended/extended factor for count nouns. The dispersive class of mass substances, class 3, includes those dry particles which are readily dispersed or spread-out, i.e., that can be extended in space: sand, smoke, and rain from the PB list, as well as soot, grain, chaff, salt, rice, and ashes from the starred forms. In contrast, the cohesive classes, 6, 5, and 14 are concerned with substances that stick together such as liquids and cohesive solids. We return for a detailed look at class 3 at the end of this section.

The second contrast is between solids and liquids, which can be shown to be related to the count noun factor, unit/collection. First of all, the class for collections, 6, is often used to mark collective plurals, i.e., those where the units cohere together. Also, cohesive collections such as a handful of stones, are internally rearrangeable--the stones can move around with respect to each other and still cohere in the collection. Liquids behave in the same manner, cohering but rearranging themselves when moving. Thus the distinction, within the cohesive node, seems to be rearrangeable/fixed: liquids are rearrangeable, class 6, whereas solids are of internally fixed arrangement, classes 5 and 14. Class 6 also includes viscous substances such as excreta, and aggregates, such as charcoal, because they meet the configurational

requirements of the class: they are internally rearrangeable but cohere rather than dispersing freely like the dry particles in class 3. Further examples of viscous substances in the starred forms list are dirt, soil, and mud, and of aggregates, millet, grass, and stubble.

The third distinction for the mass sub-system is between homogeneous and differentiated substances (all of which cohere and have relatively fixed internal arrangement). Differentiated substances in class 14 are those which have distinct parts, such as (including some starred forms) brain, honey-comb, mushroom (stem, gills, and cap), fur (hair and skin), mush (individual grains visible), and birdlime. Homogeneous substances, in class 5, are clay, wax, soil, dirt, foam, and dew (again, including some starred forms). The latter two are interesting examples of substances which although not solids do meet the configurational requirements of class 5; they cohere and maintain a relatively fixed internal arrangement. Fog seems to fall in this class in much the same way—it coheres as a homogeneous substance, and at least to human perception does not seem to rearrange itself. Of the classes used for mass nouns, class 5 is the least stable across languages. Guthrie indicates some items which also occur in class 6. These include some liquids like spittle, but also terms for soil presumably because it coheres but can be rearranged internally, especially when worked during agriculture.

Returning for a more detailed look at class 14, we find one interesting member of this class (given in the starred forms list) as bead, presumably included because in beadwork the beads are differentiated elements which are placed together in fixed patterns. Another interesting item is *-n[ngi 'large number' which may possibly refer to a collective plurality of elements which is sufficiently coherent that enumeration would not normally be performed, such as a handful of nuts. In Yeei, from Botswana, 14 is sometimes used as a collective plural for nouns normally found in 9/10, e.g., oyengora 'bunch of ground nuts', or in 11/10, e.g., osadi 'clump of reeds' [Schapera and van der Merwe 1942]. Our explanation of class 14 for mass nouns suggests an interpretation for 14/6 for count nouns which we did not consider earlier because of the very small number of cases in this data set. The five

concrete nouns we found are all units having a differentiated internal structure consisting of various different parts: bridge, bedstead, bow, canoe, and face. Although this is far too little data, we mention as a hypothesis that 14/6 may contain units having a differentiated internal structure.

Our data also contains a few mass nouns in classes 9, 10 and 11, but not enough to allow semantic analysis. As was so for the count classes, the mass classes also show a residue of items which are not obviously examples of the meaning posited for the class. Although we cannot check the secondary classifications of the now extinct proto-Bantu culture, it is important to set out some hypotheses about these, so as to show the kind of questions that might be studied in more recent Bantu cultures. We do this by an exhaustive treatment of class 3, which covers all the items given in Guthrie's starred forms list. These are shown in section P in the Appendix. First we list the large group of nouns for dispersible particulate substances which exemplify the basic meaning of the class. Then we show nouns which might be expected in other classes and whose membership here requires special explanation. The first group of these are liquids and viscous substances which might be expected in class 6. The first three listed are infusions, i.e., liquids which are mere carriers of more important substances diffused through them. Placement in class 3 may mark this dispersed presence of these latter substances. The next two refer to blood, again a liquid. However, it is that liquid which is associated with the extended blood vessels in the body. A similar argument may apply to excreta which seems rather like a class 5 item similar to clay or wax, but is associated with another lengthy piece of anatomy, the intestines. It might be argued that other substances are also associated with lengthy carriers, so that it is worth noting that blood and excreta are doubly determined as members of class 3. Not only is blood linked to blood vessels, it is also diffused throughout the body by their network. Not only are excreta linked to the intestines, but also the intestines impart to them a lengthy configuration. Next, there are three solid substances. Flesh may be placed here because it refers to muscles which are often lengthy parts of the body. Bread is here, perhaps

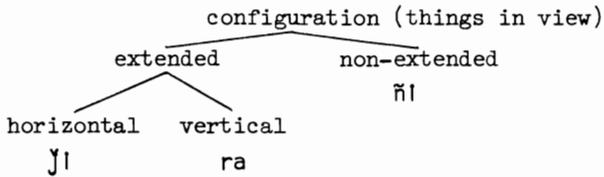
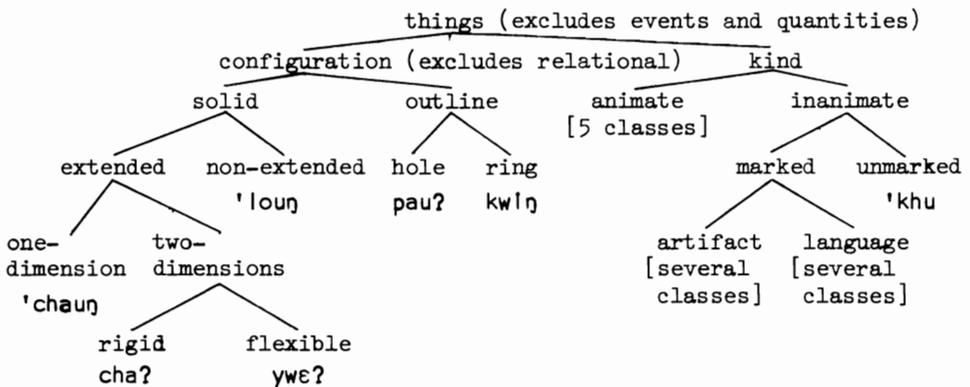
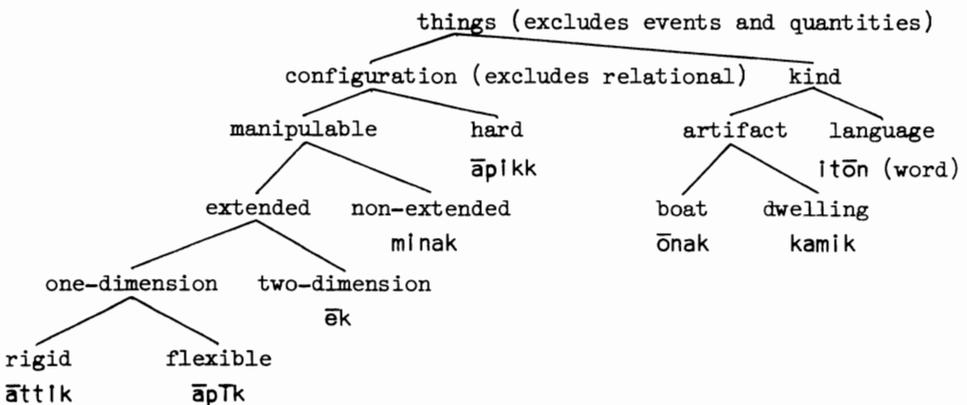
because it is a derivative of grain which is in this class--this principle is also found in Algonquian where baked foods are in the animate gender because wheat is. Metallic lead may be here because it occurs in veins in rock, contrasting with iron ore found in class 14 because it occurs in differentiated clumps in ore. Finally, we can attempt a brief look at the abstract nouns to see if the basic configurational meaning of class 3 for mass nouns, dispersive, has any application. Some of these seem to refer to qualities which pervade the environment such as daylight and darkness. Flavours and smells might also be considered qualities which pervade the objects that have them and that can be dispersed through adjacent objects and through the air. Most of the number words to ten belong to class 3, which may indicate that items must be dispersed as separate units in order to be enumerated--they cannot cohere as the normally uncounted aggregates do in class 6 (e.g., millet). We have taken this detailed look at class 3 in order to suggest hypotheses which studies of Bantu ethnoscience and intellectual culture might consider.

4. Indirect Evidence: Other Noun Class Systems

The Bantu noun prefixes are an example of noun class systems of the sort found widely among the language families of the world. Noun classes are realized as noun prefixes in Australian languages as well as in Toba from the Guaykuran family in South America. However, they are also realized as classificatory verb stems in Athapaskan, as medials in Algonquian, as lexical suffixes in Salishan, and as numeral classifiers in Sino-Tibetan, Malayo-Polynesian, Mayan, and others. Figure 2 shows three examples of noun class systems which we have analysed in order to compare them to Bantu: Toba, Burmese and Ojibway.³

³The Toba system is described in Klein [1973]. We have taken only the three classificatory morphemes, which are in fact a subsystem within a locative system employing three other morphemes. Classification only occurs when objects are located "in view", otherwise the prefix slot is filled by a locative morpheme. The Burmese system is described in Burling [1965], Hla Pe [1965] and Becker [1975]. For the configurational side we have selected those morphemes which Burling reports as involving spatial dimension, excluding only three which are concerned with specialized relational configurations. However, the semantic analysis given here was done by the present first author. The Ojibway data is also from the work of the first author [Denny and Odjig 1973a].

Figure 2. Other Noun Class Systems

TOBA (Guaykuruan) noun prefixes:BURMESE numeral classifiers:OJIBWAY (Algonquian) numeral classifiers:

We first note that all three systems employ one of the two configurational variables found in the Bantu system, extended/non-extended. However, the extended node is further developed by other variables, whereas in Bantu the extendedness variable is cross-cut by the other configurational variable, solid/outline figure. This latter variable shows up only in Burmese among the three systems we are examining. However, the extendedness variable is not applied within it as it is in Bantu. Indeed the outline figure component of the Burmese system has a much narrower range than that of the Bantu system: it covers holes and rings as does the Bantu but not containers as in Bantu. In Burmese both rigid and flexible containers are found in the non-extended solid figure class. We might say that only an interior consisting of open empty space constitutes an outline figure in the Burmese system.

If we look now at the ramifications of the extended node in some of the non-Bantu systems, we can compare them to the way in which Bantu handles extended objects. The Burmese and Ojibway systems develop extendedness by distinguishing things extended in one-dimension like poles and ropes from things extended in two-dimensions like plates and cloth. Cross-cutting this is another variable, rigid/flexible:

(1)	<u>rigid</u>	<u>flexible</u>
<u>one-dimensional</u>	e.g., pole	e.g., rope
<u>two-dimensional</u>	e.g., plate	e.g., paper

Burmese does not differentiate rigidity for one-dimensional objects, whereas Ojibway does not differentiate rigidity for two-dimensional objects. Some of the very rigid two-dimensional items introduced by Europeans would go into other Ojibway classes such as non-extended (e.g., plate) or hard (e.g., sheet of glass). In the aboriginal Ojibway world rigid two-dimensional objects would have been rare. The Burmese system is restricted in another way since the flexible two-dimensional class includes mostly leaves and paper. The other important exemplar of this configuration, cloth, has its own non-configurational class, $th\epsilon$, which we regard as an artifact class. Likewise some one-dimensional objects go into a relational class, $p\eta$, one-dimensional and perpendicular.

Returning now to the Bantu extended classes $3/4$ and $11/10$, we find that the PB lists contain largely items that are extended in one-dimension, whether rigid or flexible. The longer starred form lists however reveal typical two-dimensional items such as **-kéka* $3/4$ 'sleeping mat' and **-dédé* $3/4$ 'cloth'. There are, however, two other possibilities within the Bantu system for two-dimensional objects. One is the very broad notion of flexible container which is part of the meaning of $9/10$ so that **-gob]* 'skin, baby sling' is found there, and the other is the artifact class $7/8$ which contains **-kúto* 'garment, skin'. Just as for Ojibway, two-dimensional rigid objects are rare in traditional Bantu life and those that exist tend to go into other classes, e.g., **-dongga* 'plate' $5/6$ in the non-extended class. We might conclude then that Bantu $3/4$ combines one-dimensional rigid, one-dimensional flexible, and two-dimensional flexible objects.

Turning now to the classification of kinds in our noun class systems, it can be seen that Burmese and Ojibway have the distinction between configurational classes and classes of kinds, just as we have suggested for Bantu. This distinction is particularly well-marked in Ojibway where different morphemes for "one" are used for the configurational classes as against the non-configurational [Denny and Odjig 1973b]. In each of these languages the configurational classes involve the cognizing of perceptible spatial qualities of the object, whereas the kinds involve cognizing an object as a thing which belongs to a larger class of things, as 'chair' refers to a class of objects belonging to a larger class, 'furniture'. It is interesting to note that in languages like Toba and Athapaskan where only kinds exist, if an object changes its configuration it changes its class. Thus in Toba, humans are normally extended and vertical but if seated they are non-extended, and if lying they are extended and horizontal.

The most widely occurring items among the kinds in these noun class systems are artifacts, found in all three of the languages which have non-configurational classes, Bantu, Burmese, and Ojibway. Burmese shares with Bantu special classes for animate beings in which humans and animals are separated. Unlike Bantu, Burmese uses several classes for humans which reflect social status [Becker 1975].

The intent of these comparisons of Bantu with other noun class systems has been to show that the major semantic features of the Bantu classes, configuration/class, solid/outline, extended/non-extended, artifact/animate, are found in noun class systems in a variety of language families. These four languages may possibly show four stages in the development of classifier systems--configurational classes only as in Toba, configurational and artifact classes as in Ojibway, configurational, artifact and animate classes in Bantu, and the addition of special classes for humans of differing social status in Burmese. The comparative evidence suggests that systems such as the PB one are developed in cultures with relatively simple material technologies. Given the relatively advanced state of PB technology, we would speculate that the origins of the PB classifiers are quite old. It should be noted at the same time that change in technological base does not necessarily lead to attrition of the classification system. One need only point to the highly elaborated systems found in Southeast Asia and in Mayan languages in Mesoamerica for clear evidence of the expansion of the classificatory system attendant on the development of higher technology.

Hence, we would inject a note of caution to those who would simply assume that the classificatory system of PB has no salience for present day Bantu languages. This may indeed be the case, but it is important to not prejudge the issue. The cognitive salience of classificatory systems is in general not great (in the sense that speakers are often unaware of the bases in terms of which classifiers are chosen), but a weak kind of saliency (perhaps akin to "form-class" meaning [Brown 1958]) may exist and result in the proper assignment of new vocabulary items to appropriate classes.

In any event we feel that there is sufficient likelihood that portions of this semantic system are still operative in present day Bantu languages to warrant its investigation.

5. Summary

In summary, we have done the following:

First, we have presented an analysis of the system of noun classification in PB which indicates that the system was a semantic one based on

a core of classification in terms of configuration features. Although some of the characterizations of the meanings of particular classes may be subject to revision, we feel that the basic character of the system was as we have outlined it above.

Second, we have presented some analyses of noun class systems from other parts of the world in order to show that the PB system was not a linguistic freak, but on the contrary an instance of a typical kind of semantic structuring which is directly encoded in languages. We feel that there is now sufficient evidence to begin a characterization of the (universal) feature set and system of implicational relations these features have with one another, but we leave that task for a later date.

Third, we have pointed to the existence of cultural restructuring of this perceptually-based system. This restructuring has been elegantly demonstrated for other classifier languages [Dixon 1968] and now constitutes a task for Bantuists with a relatively deep knowledge of the cultures of the languages they study.

In concluding we would like to stress the necessary tentativeness of our formulations (a function of the character of the data at our disposal) and to express the hope that Bantuists better qualified than we are will subject our hypotheses to a careful scrutiny (this may well lead to a recharacterization of portions of the semantic structure we have constructed here). We also hope that our work will provide a fresh standpoint from which to examine the semantic contents of noun classes in contemporary Bantu languages as well as in other African languages.

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APPENDIX 1A. Class 5/6: non-extended (rounded, protruded, bunched)concrete:

-báda		'spot, freckle'
-bééde		'breast'
-bubi		'spider' (bulbous body)
-bue		'stone'
-byd		'hair on body' (circular)
-cód		'tear'
-coká		'axe' (i.e., the head)
-dóbo	(7/8, 9/10, 14/6)	'fish hook'
-dú	(singular only)	'knee'
-gego		'molar tooth'
-gí		'egg'
-g ko		'fireplace' (three hearthstones)
-jada		'rubbish heap'
-júba	(singular only)	'sun'
-júdu		'nose'
-káda		'ember'
-kóbú		'navel' (often protruded)
-konde		'banana' (by extension from other fruits)
-kot		'nape of neck' (bunch of muscle)
-p ga		'cooking stone'
-púté		'boil, carbuncle'
-pú		'stomach' (protrusion)
-táko		'buttock'
-táma		'cheek'
-t na		'base of tree trunk' (rounded protrusion)
-y co		'eye'
-y no		'tooth'

concrete-problematic:

-dadá		'palm-frond' (differentiate from -dadá 3/4 palm tree)
-kúpa	(3/4, 7/8)	'bone' (protrusion)
-papá	(11/10)	'wing' (protrusion)
-tú	(15/6)	'ear' (differentiate from -tú 3/4 head)

abstract:

-júǐ		'voice'
-kúmǐ		'ten'
-kúá		'inheritance'
-páca		'twin'

B. Class 3/4: extended (long)concrete:

-bidi		'body'
-canga		'sandy island' (usually elongated)
-cúá		'termite' (particularly long body)
-cúdo		'stream'
-cúndu		'leech'
-dǐ		'root'
-dǐgǐ		'bark-fibre string'
-domo		'lip'
-donga		'river'
-dongo		'line of objects'
-gongo		'back of body'
-gudu		'leg'
-gunda	(5/6, 9/10)	'garden (plot)' (typically long)
-gúǐ		'arrow'
-kída		'tail'
-kǐpa		'vein; tendon'
-kúyú		'fig tree'
-nue		'finger'
-pǐnǐ		'handle, haft'

-tabi	'branch'
-támbo	'trap' (bent branch and noose)
-tí	'tree'
-tete	'hamper' (long)
-yedé	'knife'
-yíba	'thorn'
-yíko	'ladle'
-yínci	'pestle'

concrete-problematic:

-bombó	'forehead' (length culturally valued)
-díma (5/6)	'bat'
-gyba (singular only)	'bellows'
-tíma	'heart' (differentiate from -tíma 5/6 liver)
-tú	'head' (length culturally valued)

abstract:

-dímo	'work' (cultivation)
-dígo	'load'
-dímu	'spirit'
-kíndo	'footfall'
-yáka	'year' (temporal extension)
-yéđi	'month' (temporal extension, 'moon')
-yínci	'daytime' (temporal extension)

C. Class 9/10: non-extended, outline figureconcrete:

-bambo (7/8, 11/10)	'peg' (for holding down the edge of something)
-biga	'pot for storage'
-buga	'open space'
-búto	'seed'
-búi	'white hair' (ring shape)
-cí	'ground, country'

-cúpa		'calabash bottle'
-dúdú		'gall-bladder'
-gandá		'chief's house'
-goma		'drum'
-gubo		'skin garment'
-já	(singular only)	'outside'
-jída		'path, clearing, open way'
-káta		'head pad' (ring of grass)
-kíǵé	(7/8, 11/10)	'eyebrow' (surrounds the eye)
-kíŋgo		'neck' (openings to stomach and lungs)
-pako		'tree hollow'
-pingú		'fetish, charm' (bundle)
-tunda	(5/6, 7/8)	'heap, mound' (of material carried in baskets and dumped)
-yíma	(singular only)	'back, rear'
-yundo		'hammer, axe' (tool for penetrating)
-yungú		'cooking pot'

concrete-problematic:

-boga		'vegetable'
-cace	(5/6, 11/10)	'spark' ("hole" in darkness)
-da	(singular only)	'abdomen'
-káǵí		'paddle' (often concave)
-népédí		'star' ("hole" in darkness)
-pígo		'kidney'

abstract:

-joodí		'dream'
-pépo		'cold wind'

D. Class 11/10: extended, outline shape (curved)

concrete:

-badú		'rib, side of body'
-bubí		'spider's web'
-gudu		'hill'

-kóko	(5/6)	'crust'
-pí		'palm of hand, slap'
-yádá	(5/6, 7/8, 9/10)	'fingernail'
-yígá	(3/4)	'horn'

concrete-problematic:

-dímj	(5/6, 7/8)	'tongue'
-kúnj	(9/10)	'piece of firewood'

abstract:

-bodá		'bee-sting'
-gendo	(7/8, 9/10)	'journey'
-yímbo	(3/4, 5/6, 7/8)	'song' (melodic undulation)

E. Class 14/6: differentiated internal structureconcrete:

-dado		'bridge'
-dldí		'bedstead'
-tá		'bow'
-yáto		'canoe'
-cfo		'face'

abstract:

-t{ku		'night' (differentiate from -t{ku 5/6, 9/10 24 hour day)
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F. Class 1/2: person

-dúme		'husband, man'
-genj		'stranger'
-kádj		'wife, woman'
-kó		'relative by marriage'
-kúdu		'old person'
-kú		'dead person'
-ntu		'person'
-túá		'pygmy'

-yadí	'girl at puberty'
-yána	'child'
-y[bi]	'thief'
-y[ʃjúkúdu]	'grandchild'
-y[ne]	'owner'

G. Class 9/10: animal

animal:

-bámba	'poisonous snake'
-béndé	'kind of rat'
-bogó	'buffalo'
-bú	'mosquito'
-búa	'dog'
-búd[ɪ]	'goat'
-cádaky	'driver ant'
-c[mba]	'wildcat'
-c[ú]	'fish'
-dá	'louse'
-g[ɪ]	'fly'
-go	'leopard'
-gombe	'cattle'
-gɥdobe	'bush pig'
-gɥbú	'hippo'
-jogy	'elephant'
-kádá	'crab'
-káka	'anteater'
-káŋga	'guinea fowl'
-kíma	'monkey'
-k[á]	'antelope, duiker'
-kódá	'snail'
-kuadí	'partridge'
-kucu	'grey parrot'
-kúkú	'chicken'

-kúndá	'domestic pigeon'
-kúpá	'tick'
-kúdu	'tortoise'
-nóka	'snake'
-pádá	'impala'
-púku	'rat'
-tɔŋgo	'civet cat'
-yama	'animal'
-yáti	'buffalo'
-yúki	'bee'

human:

-ganga	'medicine man'
-kúmu	'chief'
-pokɔ	'blind person'

H. Class 7/8: utilitarian artifacts, (by extension) despised objects and beings

concrete:

-bedo	'thigh' (deprecatory)
-démá	'lame person' (deprecatory)
-donda	'sore' (deprecatory)
-nama	'upper leg of animal' (deprecatory)
-nena	'(pubes) abdomen below navel' (deprecatory)
-nú	'mortar for pounding'
-táda	'platform' (granary)
-tɔ́má	'well'
-yudá	'frog' (deprecatory)
-yúma	'thing' (belongings)

concrete-problematic:

-kuá	'yam'
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I. Class 3: dispersive substances (separate particles, infusions)

concrete:

-céké	'sand'
-codj	'broth'
-dymbí	'rain' (continuous, misty)
-tí	'herbal remedy'
-yúkí	'smoke'

abstract:

-canfá	'daylight'
-doodj	'whistling'
-yáyu	'yawn'
-yédj	'moonlight'
-yídimá	'darkness'
-yoyo	'life'

J. Class 6: liquids, viscous substances, aggregates

concrete:

-bééde	'milk'
-bí	'excreta'
-cu	'urine'
-da	'intestines' (produce excreta)
-káda	'charcoal' (also count noun 5/6)
-kúta	'oil'
-mída	'nasal mucus'
-pína	'pus'
-té	'spittle'

abstract:

-tíka	'cold weather' (wet)
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K. Class 5: substances which stick together

concrete:

-búmba	'clay for pottery'
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-bú	'soil'
-dobá	'sticky soil'
-púdo	'foam'

abstract:

-gudo	'yesterday'
-gudu	'top, sky'

L. Class 14: differentiated substances, abstractsconcrete:

-dimbo	'birdlime'
-táde	'iron-stone' (iron-ore)
-yoga	'mushroom'
-yongó	'brain'
-yúki	'honey' (honeycomb)

abstract:

-dogj	'witchcraft'
-dudu	'bitterness'
-ganga	'medicine'
-kádi	'fierceness'
-kúdu	'old age'
-kúpí	'shortness'
-yóma	'fear'

M. Class 9: unclearconcrete:

-búda	'rain'
-kíma (7)	'mush'
-pémba (11)	'white clay'
-yama	'meat'

abstract:

-cónj	'shame'
-godu	'strength'
-jada	'hunger, famine'

N. Class 10: insufficient data

-dedy	'beard'
-kúnde	'edible beans'

O. Class 11: insufficient data

-kungú	'dust'
-kú	'death'
-pádá	'baldness'

P. Class 3: starred forms

dry particulate substances:

-b[do	'soot'
-canga	'sand'
-céké	'sand, grains'
-dymbí	'rain, misty, continuous'
-jungu	'chaff'
-kéde	'salt'
-nu	'salt'
-púngá	'rice'
-táma	'sorghum'
-tó (14)	'ashes'
-y[kj (14)	'smoke'
-y[no	'salt'
-yókj (5)	'smoke'

liquids and viscous substances:

-codj	'broth'
-to	'gravy'
-yábj	'ordeal poison'
-yad['blood'
-dopa	'blood'
-kímba	'excreta'

solids:

-nokɥ	'flesh'
-kááté	'bread'
-todɥ	'metallic lead'

abstracts:

-caná	'daylight'
-díó	'pleasant flavour'
-dúdɿ	'whistling'
-godo (5)	'evening'
-náne	'eight'
-nɥŋko (7)	'smell'
-pako	'provisions'
-túúbá	'six'
-yícf	'daylight'
-yɿdima	'darkness'
-yopo	'life'